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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|------------------------|-------------|----------------------|---------------------|------------------|
| 10/805,872 | 03/22/2004 | John L. Caldwell | 108298770US | 9880 |
| 25096 | 7590 | 12/23/2005 | EXAMINER | |
| PERKINS COIE LLP | | | NGUYEN, JIMMY | |
| PATENT-SEA | | | | |
| P.O. BOX 1247 | | | ART UNIT | |
| SEATTLE, WA 98111-1247 | | | PAPER NUMBER | |
| | | | 2829 | |

DATE MAILED: 12/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-----------------|-----------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/805,872 | CALDWELL ET AL. | |
| | Examiner | Art Unit | |
| | Jimmy Nguyen | 2829 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17 - 37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24 is/are allowed.
- 6) ☒ Claim(s) 17 - 23, 25 - 37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Argument

Applicant's arguments, filed 10/17/05, with respect to the rejection(s) of claim(s) 17 – 37 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 17 – 23, 25 - 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al (US 6,707,309) in view of Akram et al (US 6,373,273).

As to claims 17, 26, 32, 37, Sato et al disclose (fig 1)

A test socket (24) for receiving a microfeature device (26) having a substrate and a plurality of interconnect elements (26a) projecting from the substrate (26), the test socket (24) comprising a recess (open middle section) having a lead-in surface (open surface) and a support surface (upper surface 24), the support surface (30, 32).

However, Sato et al are silent on a plurality of apertures positioned to receive corresponding interconnect elements of the microfeature device, wherein the individual aperture extend through the test socket and have a cross-sectional dimension less than

a cross-sectional dimension of the interconnect elements so that the substrate is spaced apart from the support surface when the microfeature device is received in the recess.

On the other hand, Akram et al teach (fig 29) a plurality of apertures (16) positioned to receive corresponding interconnect elements (14) of the microfeature device (12), wherein the individual aperture (16) extend through the test socket (10) and have a cross-sectional dimension less than a cross-sectional dimension of the interconnect elements (14) (the cross section of pocket 16 is less than the cross section of contact 14) so that the substrate (12, 32) is spaced apart from the support surface (top surface of 10) when the microfeature device (12) is received in the recess (16).

It would have been obvious to one having an ordinary skill in the art at the time of the invention was made to modify the teaching of Sato et al with the aperture as taught by Akram et al for the purpose ensuring the contact between the semiconductor devices with the socket.

As to claims 18, 29, 35, Akram et al teach (fig 29) the test socket of claim 17, wherein the apertures (16) in the support columns corresponding to an array of interconnect elements (14) on the microfeature device (12).

As to claims 19, 30, 36, Akram et al teach (fig 29) the test socket of claim 17 wherein:

the support surface (the upper surface of 10) further comprises an opening, and the apertures (16) in the support surface are arranged around the perimeter of the opening so that when the microfeature device (12) is received in the recess, the apertures (16) receive the corresponding interconnect elements (14) and the other interconnect elements are positioned at the opening.

As to claim 20, Akram et al teach (fig 29) the support surface (the upper surface 10) further comprises an opening, and the apertures (16) comprise at least three apertures around the opening.

As to claim 21, Akram et al teach (fig 29) the test socket (10) of claim 17 wherein the cross-sectional dimension of the individual apertures (16) is from approximately 70 percent to approximately 80 percent of the cross-sectional dimension of the corresponding interconnect elements (14).

As to claims 22, 31, Sato et al disclose (fig 1) the test socket of claim 17, further comprising:

a body having the recess (middle section opening) and a shelf (30b) , and
a ball support member carried by the shelf (30b) and having the support surface.

As to claim 23, Akram et al teach (fig 29) the test socket of claim 17 wherein the individual apertures (16) comprise a beveled portion.

As to claims 25, 28, 34, Akram et al teach (figs 27 - 29) the test socket of claim 17 wherein: the cross-sectional dimension of the individual apertures (16) is a first, smallest diameter in the apertures; and the individual apertures comprise a first portion having the first, smallest diameter and a second portion having a second diameter greater than the first diameter.

As to claims 27, 33, Akram et al teach (fig 29) the test socket (10) wherein the individual apertures (16) have a cross sectional dimension less than a cross sectional dimension of the corresponding interconnect element (14).

Allowable Subject Matter

3. Claim 24 is allowed.

The prior arts of record are fail to disclose the combination of a test socket for receiving a microfeature device having a substrate and a plurality of interconnect elements projecting from the substrate. the test socket comprising a recess having a lead-in surface and a support surface, the support surface including a plurality of apertures positioned to receive corresponding interconnect elements of the microfeature device, wherein the individual apertures extend through the test socket and have a cross-sectional dimension less than a cross-sectional dimension of the interconnect

Art Unit: 2829

elements so that the substrate is spaced apart from the support surface when the microfeature device is received in the recess, wherein the test socket further comprises an exterior surface opposite the support surface, and wherein **the individual apertures comprise a first beveled portion proximate to the support surface and a second beveled portion proximate to the exterior surface.**

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Nguyen whose telephone number is (703) 306-5858. The examiner can normally be reached on M-F from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ramtez Nestor can be reached on 571-272-2034. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/805,872
Art Unit: 2829

Page 7

Jimmy Nguyen

12/17/05


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Au-2829
12/19/05